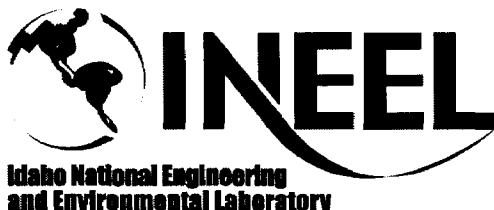


# **A-E Procurement Specification**

PROJECT FILE NO. 020996

## **SSSTF Soil Stabilization System (SSS) Procurement Specification**

Prepared for:  
U.S. Department of Energy  
Idaho Operations Office  
Idaho Falls, Idaho



[illegible]

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**Attachments:**

Vendor Data Requirements (Form 414.12A)  
Floor plan of Decon Building (CPP-1688, Drawing A-1)

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## **1.0 SCOPE**

### **1.1 General**

The Idaho National Engineering and Environmental Laboratory (INEEL), a United States Department of Energy National Laboratory operated by Bechtel BWXT Idaho, LLC (BBWI) will procure a Soil Stabilization System (SSS). This Specification details the requirements for the SSS which will be located within the Staging Storage, Sizing, and Treatment Facility (SSSTF) at the Idaho Nuclear Technologies Engineering Center (INTEC), Scoville, Idaho.

The SSS shall have the capability of stabilizing soils as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions that contain Resource Conservation and Recovery Act (RCRA) hazardous substances along with certain radionuclides. The stabilization treatment process shall reduce the leaching characteristics of RCRA contaminants within the soil to acceptable levels as determined by the Toxicity Characteristics Leaching Procedure (TCLP). The TCLP is the responsibility of BBWI.

The soil is currently being stored in 2' x 4' x 8' wooden boxes lined with 10 mil plastic liners at the INTEC facility. INTEC is a radiologically controlled facility within the boundaries of the INEEL. The assumption is made that the boxes of soil weigh approximately 8,000 pounds each. The quantity of soil to be stabilized is a minimum of 2,060 cubic yards. The SSS shall be capable of treating a minimum of 10 cubic yards of soil per day.

It is required that the Subcontractor provide and install all components into a functionally integrated soil stabilization package complete and ready for use in accordance with the Equipment Manufacturer's installation procedures. The end product will be moist, friable soil for the stabilization of RCRA listed materials. Transportation of the remediated soils to the INEEL CERCLA Disposal Facility (ICDF) shall be performed by BBWI.

The SSS shall also be capable of handling aqueous liquid/sludge waste streams. These waste streams have yet to be determined, and as such, will require evaluation for hazardous and radiological contents prior to entering the SSS. The waste streams will be injected into the mixer on top of solidification/stabilization agents. These agents consist of a blend of Portland Cement and trace quantities of sodium sulfide and plasticizers. The end result will be a homogenous waste solid with excellent leach resistance.

All equipment and components contained within this Specification shall be new and unused. All electrical equipment and components shall be UL listed.

The Subcontractor shall also be responsible for all support equipment and safety features that provide for a complete system that is fully operational and compliant with all Occupational Safety and Health Administration (OSHA) regulations.

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## **1.2 Work Included**

This Specification covers the Subcontractor and Equipment Supplier's requirements for the design, fabrication, assembly, installation, testing and training for the SSS. It is not the intent of this Specification to completely define all details of installation. Equipment shall be designed, fabricated, assembled, and installed in accordance with this Specification and the Equipment Supplier's and Subcontractor's Standard Practices when such practices do not conflict with this Specification.

The Equipment Supplier must submit a point-by-point response, explaining how the proposed SSS conforms to each of the identified Specification requirements.

The SSS shall be delivered and completely assembled and installed at the INEEL by the Subcontractor. The Equipment Supplier shall provide technical support and training to BBWI during start-up and testing as indicated in Sections 8.1.3 and 8.3 of this Specification.

The following shall be delivered to BBWI:

1. A complete and fully integrated design of the SSS that includes drawings, material specifications, equipment lists, fabrication details, and assembly/installation instructions. See Section 5 of this Specification for further design details.
2. All of the components listed in Section 1.4.5 (Soil Stabilization System)
3. Vendor Data Submittals in accordance with the Vendor Data Schedule and this Specification.
4. A fully operational system in full compliance with all Contract requirements.
5. Any special tools required for operation and maintenance of the system and in accordance with the Special Tools List identified in Section 4.2.

## **1.3 Work Not Included**

Equipment, unless specified herein, is not included. The following items shall not be included in the scope of work of the Subcontractor:

- Radiation monitoring and any required shielding local to the SSS shall be furnished and installed by BBWI.
- The design, fabrication, and installation of the liquid/sludge waste injection system shall be the responsibility of BBWI. Only the multi-port injection connections on the mixer are included in the Equipment Manufacturer's Scope of Work.
- The Subcontractor shall not provide forklifts. Providing forklifts will be the responsibility of BBWI.

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## **1.4 Definition of Terms**

- 1.4.1** "FURNISH" or "PROVIDE" shall mean to supply, equip and deliver.
- 1.4.2** "INTEC" shall mean Idaho Nuclear Technology and Engineering Center.
- 1.4.3** "CONTRACTOR" shall mean Bechtel BWXT Idaho, LLC (Limited Liability Company) and its successors and assigns. Also referred to as BBWI.
- 1.4.4** "SUBCONTRACTOR" shall mean the persons, firm, or corporation selected by the Contractor to install the equipment specified herein.
- 1.4.5** "EQUIPMENT MANUFACTURER" or "EQUIPMENT SUPPLIER" shall mean the persons, firms, or corporations selected by the Subcontractor to design, fabricate, and provide the equipment and services specified herein.
- 1.4.6** "SOIL STABILIZATION SYSTEM" (SSS) shall represent the mixer, box unloader, reagent addition system, air scavenger system (which confines the entire SSS System), ventilation system including make-up air system (if required), equipment cleaning system and remote station process control. It is the responsibility of the Equipment Supplier to provide the entire Soil Stabilization System as required by this Contract.
- 1.4.7** "REAGENT" Reagents may be added to the cement/soil material to stabilize the heavy metal contaminants or to modify the cement physical properties. Chemical reagents may be added to convert the heavy metals to insoluble, and therefore less toxic, forms. Admixture reagents, such as water-reducers or plasticizers, are added to give the cement/soil combination better flow characteristics or greater slump. These reagents may be added as either liquids or solids. The amount of reagents added is typically small – enough to achieve an approximate concentration of 1 to 20 part per million in the product cement/soil. Reagents consist of a blend of Portland Cement with trace quantities of sodium sulfide and plasticizers. The addition of reagents to the SSS is the responsibility of the Contractor.
- 1.4.8** "TOXICITY CHARACTERISTICS LEACHING PROCEDURE" (TCLP) This is an EPA standardized laboratory procedure for determining whether a waste is hazardous due to the leachability of heavy metals. For solid wastes, approximately 100-gram samples of material are required for the test.
- 1.4.9** "CPP" shall mean Chemical Processing Plant.

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## **2.0 QUALIFICATIONS**

### **2.1 Minimum Qualifications of Equipment Supplier**

The Equipment Supplier shall submit documentation containing evidence of prior experience with the design, fabrication, assembly, installation and delivery of Soil Stabilization Systems employing field proven (not theoretical, prototype, laboratory or first run) technology, similar to the system required under this Specification. There must also be prior evidence that the system can handle liquid/sludge aqueous waste streams.

The equipment shall be supplied by a firm that has prior related experience in the manufacturing and installation of Soil Stabilization Systems.



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### 3.0 APPLICABLE CODES, STANDARDS, AND REFERENCES

The design of the SSS, as well as the materials used in their construction, shall be as recommended by the Equipment Manufacturer unless specified by the Contractor, and shall comply with the revision of applicable regulations, safety codes, specifications and standards in effect on the date of this Contract, including applicable technical definitions, as acknowledged and accepted in the industry, and as specifically designated by this Specification, which include, but are not limited to, the Codes and Standards in Section 3.1.

All designs, material, equipment and services provided by the Equipment Supplier shall comply with all Federal, State and local laws, regulations and codes, and all applicable Specifications and Standards including, but not limited to, those listed in 3.1.

Equipment and services furnished by the Equipment Supplier shall comply with the latest revisions of the Occupational Safety and Health Act of 1970 (OSHA), and all applicable standards thereunder.

In the event of any inconsistency between Codes, Standards and this Specification, the inconsistency shall be resolved by giving precedence as follows: (a) Codes, (b) Standards and (c) Specification. The Equipment Supplier shall refer any conflicts promptly in writing to the Contractor using the Subcontractor Field Problem form.

#### 3.1 National Codes and Standards

ACGIH	-	American Conference of Governmental Industrial Hygienists
AISC	-	American Institute of Steel Construction
ANSI	-	American National Standards Institute
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
AWS	-	American Welding Society
CEMA	-	Conveyor Equipment Manufacturer's Association
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
CPMB	-	Concrete Plant Manufacturer's Bureau. (#101-96)
IEEE	-	Institute of Electrical and Electronics Engineers
ISA	-	Instrument Society of America
NEC	-	National Electric Code
NEMA	-	National Electrical Manufacturer's Association
NFPA	-	National Fire Protection Association
NIST	-	National Institute of Standards and Technology
NRMCA	-	National Ready Mix Concrete Association. (#186)
OSHA	-	Occupational Safety and Health Act
RCRA	-	Resource Conservation and Recovery Act
SSPC	-	Steel Structure Painting Council
UBC	-	Uniform Building Code
UMC	-	Uniform Mechanical Code

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UL - Underwriters Laboratories, Inc., Standards and Directories of  
Listed Products

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## **4.0 SUBMITTALS**

As a minimum, the Subcontractor shall provide the Contractor with the submittals referenced in this Section. The Subcontractor shall be responsible for all submittals that come from the Equipment Supplier. Additional submittal requirements are defined in the Vendor Data Schedule and applicable Contract documents. The quantities and submittal schedule will be included in the procurement RFP package and is also included in the attached Vendor Data Schedule.

### **4.1 Inspection Test Plans/Procedures/Reports**

This includes the following:

Performance Tests (Factory Preshipment): Performance test plans, procedures, and reports as outlined in Section 7.2 of this Specification.

Performance Tests (On-Site, INEEL): Performance test plans, procedures, and reports as outlined in Section 7.3 of this Specification.

### **4.2 Spare Parts and Special Tools List**

The Subcontractor shall submit to the Contractor a list of recommended spare parts and any special tools required for operation and maintenance of the SSS components. This includes corresponding Suppliers of each component and their phone numbers. The list shall include pricing and delivery information valid for one year after delivery of the equipment on a regular basis.

### **4.3 Special Packaging/Shipping/Rigging**

The Subcontractor shall submit a Packaging/Shipping/Rigging Procedure in accordance with Section 9.0 of this Specification.

### **4.4 MSDS's**

Prior to fabrication release, the Contractor shall approve any Material Safety Data Sheets (MSDS's). The Contractor shall submit MSDS's for approval on any material that periodically requires disposal. This allows the Contractor to verify INEEL CERCLA Disposal Facility (ICDF) waste acceptance and disposal requirements. Suspect or known carcinogenic materials are not acceptable for use.

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## **4.5 Cleaning**

The Subcontractor shall submit a cleaning procedure that ensures the SSS equipment is free of debris and contaminants. See Section 6.3 of this Specification for further details.

## **4.6 Design Verification**

See Section 5.9 for these requirements.

## **4.7 Operations and Maintenance Manuals**

The Subcontractor shall furnish six (6) copies of the Operations and Maintenance Manual per the Vendor Data Schedule.

The Operations and Maintenance Manual shall cover the installation, operation and maintenance of the equipment in detail. The manual shall describe the method of installing each component in step by step detail. All drawings, diagrams, and record forms required for the installation shall be included and incorporated in the manual.

The O&M manual shall be divided into 3 separate sections, (1) Operations, (2) Maintenance, and (3) Installation. Each copy of the Operations and Maintenance Manual shall be bound in a three-ring binder(s) that includes following minimum information:

1. Compilation of all technical and design data and related information for the maintenance and operation of equipment furnished by the Equipment Supplier.
2. Technical description of each device, subsystem, and system.
3. Engineering data, all final layouts and wiring diagrams.
4. Shipping, receiving, and storage instructions.
5. Installation instructions.
6. Device settings.
7. Commissioning and field-tests.
8. Adequate troubleshooting detail shall be provided such that the Contractor technicians, trained in accordance with the requirements in this Specification, are able to isolate a fault to a specific component or circuit board, remove and replace the faulty component, and return the drive to operation.

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9. Step-by-step sequence of normal start-stop and emergency shutdown operations of all systems.
10. Preventative maintenance instructions.
11. Guide to trouble shooting all equipment.
12. Subtier items that identify make/model of components furnished. Price and warranty information shall be included with Subtier components.
13. List of recommended spare parts and special tools list.
14. Technical information and catalog cuts for all products specified by this Specification.
15. Final "paper" drawings reduced and folded.
16. Typed index and separator tabs marked with the name of the equipment described therein.
17. Original Equipment Manufacturer's printed information describing the EXACT equipment furnished. Each sheet shall be marked with the EXACT nomenclature for the equipment used in the specific system.
18. Equipment information shall be highlighted to show EXACTLY what capacities and EXACTLY what options have been provided. The highlights must be reproducible on a copy machine.
19. The Operations and Maintenance Manual shall cover all items supplied, including materials that the Equipment Supplier obtained from Subtiers. The Equipment Supplier shall be responsible for securing the manuals and lists for all items furnished and for incorporating them in the manuals.
20. The Operations and Maintenance Manual shall include only final, as-installed, system data.

## **4.8 Drawings**

The Equipment Supplier shall submit prints of the final drawings disclosing the configuration of SSS equipment. These drawings shall document the mechanical, electrical, and instrumentation configuration. The drawings shall be of sufficient detail to allow the Contractor to identify and evaluate the systems and components for installation, operation, maintenance, and repair activities without detailed physical inspection of the actual hardware. Drawings shall be

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submitted in both paper and AutoCAD 2000 only. The maximum size of all drawings shall be 24" by 36" unless otherwise approved by the Contractor.

The Subcontractor shall submit the following drawings for review and approval prior to fabrication:

1. Schematic drawings.
2. General arrangement drawings that show all equipment locations and layout within the facility. Additionally, these drawings shall show minimum and maximum allowable distances between equipment.
3. Structural detail drawings showing special provisions in the floor slab due to loads generated by the equipment contained within this specification (i.e., special foundation configurations). The Equipment Supplier must coordinate with the post tension floor designer for this activity.
4. Assembly drawings.
5. Drawings shall include the weight of each unit.
6. The Subcontractor shall submit Equipment Supplier's drawings showing recommended installation methods of the SSS equipment.

#### **4.9 Design Calculations**

The Subcontractor shall submit the Equipment Supplier's design calculations for:

All structural design details, electrical equipment loads, ventilation leakage rates, and dust emissions.

All design calculations shall be reviewed and stamped by a Registered Professional Engineer of the State of Idaho.

#### **4.10 Service Requirements**

The Subcontractor shall submit to the Contractor service requirements (e.g., electrical, raw water) necessary for INEEL personnel to plan and perform SSS service connections at the INEEL.

#### **4.11 Product Data**

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The Subcontractor shall submit Equipment Manufacturer's technical data per the Vendor Data Schedule. Data shall include the Equipment Manufacturer's name, address, telephone number, model number, and specific information on performance, operating parameters, ratings, capacities, characteristic efficiencies, catalog data, equipment dimensions, evidence of compliance with safety and performance standards, and other data required to fully describe the equipment. The data shall also be identified with the tag number of the equipment or device for which the data applies.

#### **4.12 Warranty**

Include the name, address, and telephone number of the firm(s) providing the warranty service. The warranty for the complete Soil Stabilization System shall be warranted for a period of two (2) years from the date of initial start-up. This includes, but is not limited to, repair parts, labor, reasonable travel expenses, and expendables. Multiple warranties for individual components will not be acceptable. Complete warranty documents must be provided. Response time for warranty items is 2 weeks.

#### **4.13 Quality Assurance**

The Subcontractor shall submit Quality Assurance program requirements. See Section 7.1 for details.

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## 5.0 DESIGN

### 5.1 General

The SSS shall be designed by the Equipment Supplier to provide for a fully functional system and to perform as specified in a safe and efficient manner. This section defines the design requirements for the SSS.

#### 5.1.1 Site Conditions

The site conditions are as follows:

Elevation above Mean Sea Level	5000 ft.
Ambient Outdoor Temperature Range	-20° F to 105° F
Average	45° F
Ambient Outdoor Relative Humidity Range	15% to 90%
Average	33%
Ambient Indoor Temperature Range	45° F to 95° F
Average	75° F
Ambient Indoor Relative Humidity Range	10% to 80%
Average	30%

Freeze protection features shall be employed by the Subcontractor on any outdoor equipment due to the winter conditions at the INEEL.

#### 5.1.2 Waste Soils

The following particle size distribution approximates typical soil gradations:

Sieve Size	% Passing
3"	100
1 1/2"	95
3/4"	72
1/2"	60
#4	30
#8	20
#50	12
#200	7.5



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A representative stabilization mix design (proportioned by weight) is as follows:

	Nominal	Range
Soil	80%	35-80%
Cement *	10%	10-50%
Water	10%	10-15%

\*Cement may be blended with Class F Fly Ash, Blast Furnace Slag, or other pozzolans.

### 5.1.3 Aqueous Liquid/Sludge Wastes

The aqueous liquid/sludges have not yet been identified, and therefore, the hazardous and radiological constituents of these wastes are not known. Each individual liquid/sludge waste will require evaluation for hazardous and radiological contents prior to entering the treatment building to ensure that each is compatible with the design codes, regulatory requirements, and special requirements (electrical, ventilation, etc.) for the process building. It is the intent of the Contractor that the SSS be flexible in its operation so these types of wastes can be stabilized.

### 5.1.4 Inputs/Outputs

#### Inputs:

Boxed soils shall be shipped from existing storage location to the SSSTF by Contractor trucks.

Boxed soils shall be loaded onto the Box Unloader portion of the SSS by Contractor forklifts.

Liquid wastes shall be shipped to the SSSTF and injected/pumped into the SSS by Contractor personnel.

#### Outputs:

The end package shall be 2' x 4' x 8' boxes and a mobile loading device capable of discharging the treated soil mixture into a standard truck-mounted 20 cubic yard roll-on/roll-off container.

Removal of containerized treated soils from the SSS and transfer to temporary or permanent storage shall be accomplished by the Contractor.

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### **5.1.5 Subcontractor Furnished Systems**

The Subcontractor will provide the following:

Building – The building is a UBC Occupancy: F2, UBC Building Type: II N. See attached floor plan (drawing A-1) for space availability of Soil Stabilization System. The roof is 17 feet high at the eave and 21 feet at the pitch. Access to the building will be through 14 x 14-ft overhead doors. There is 1,538 ft<sup>2</sup> of floor area of which 900 ft<sup>2</sup> is usable for the permanently installed mixing operation (see Treatment Area, room 112 of attached drawing A-1).

Power will be supplied at 480 volt, 3 phase with 100 kW available for continuous usage by the Contractor. An additional 200 kW of heating load can be administratively controlled to run intermittent processes. This 200 kW will be available on a continuous basis during the non-heating spring to fall months. The Subcontractor shall submit electrical requirements for their proposed system.

Raw water is supplied to the building for use with the stabilization process and equipment washdown system via a pressurized water system. Nominal pressure is 40-60 pounds per square inch.

### **5.1.6 Standard Commercial Product**

The SSS shall be in accordance with the requirements of this Specification and shall be the Equipment Manufacturer's standard commercial product to the greatest extent possible. Standard features of the Equipment Manufacturer's standard commercial product line that exceed the requirements of this Specification are not specifically prohibited by this Specification and may be included in the equipment to be furnished. A standard commercial product is a product, which has been sold or is being currently offered for sale on the commercial market through advertisement, by Equipment Manufacturer's catalogs, or brochures, that represents the latest production model.

### **5.1.7 Design Loads**

Dead and Live Loads: Combinations of these loads shall conform to ASCE 7-98.

Seismic Loads: Seismic loads shall be determined and applied in accordance with the Uniform Building Code (UBC), 1997 edition, using Seismic Zone 2B, Soil Profile S<sub>D</sub>, and an Importance Factor of 1.0.

### **5.1.8 Workmanship**

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The SSS equipment shall be designed and packaged to withstand the strains, jars, and vibrations incidental to shipping, storage, and installation in addition to those experienced during operation.

#### **5.1.9 Lifting and Tie Down**

The SSS equipment shall be equipped with lifting and tie-down attachments per Equipment Manufacturer's standard design for the selected equipment. The Equipment Manufacturer(s) shall submit documentation identifying the tie-down, rigging and hoisting information. The lift information shall include a diagram showing the lifting attachments and lifting slings, the capacity of each attachment, and the required length and size of each sling. The center of gravity shall be shown. The tie down information shall identify configuration and the instructions for transport. Suitable lifting lugs shall be provided for hoisting motors during installation and for maintenance purposes as well.

### **5.2 Mixer**

The mixer shall be capable of providing a homogeneous blend of soil and reagent and have a minimum capacity of 13,000 pounds. The system must be robust enough to provide mixing for a wide range of feed with aggregates up to 6" while at the same time providing enough sheer to generate a homogeneous mixture. At the same time, the mixer must be able to accept and adequately mix aqueous liquid/sludge wastes with no leakage.

After the mixer has produced a homogeneous blend of contaminated soil and reagent, the mixer shall be capable of delivering the soil into 2' x 4' x 8' boxes and a mobile loading device capable of discharging the treated soil mixture into a standard truck-mounted 20 cubic yard roll-on/roll-off container.

Minimum salient features of the mixer include but are not limited to:

- **Material cleaning/screening system.**

A material cleaning/screening system will be necessary to keep the mixer free of debris that may impact the operation of the mixer. This system shall be capable of self-decontamination. Examples include, but are not limited to: internal washdown system or a high-pressure wand for final clean out. The mixer compartment shall be designed to collect water and also have a 3-inch drain plug in the bottom for washdown liquid disposal. Disposal of the washdown liquid is the responsibility of the Contractor.

- **Self-lubricating system for the mixing shafts.**
- **A mixing tank liner that provides for a 15 year wear life.**

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- A port capable of accommodating a moisture probe. Recommended port size is 1" NPT. One port plug shall be provided.
- A multi-port (four port) liquid/sludge injection connection for flexibility in waste stream injection. Recommended port size is 2" NPT. Four port plugs shall be provided.
- An automatic discharge door that is equipped with a hand pump for emergency discharging.
- A structurally sound maintenance and access platform constructed per OSHA Standards. Platform design and drawings shall be submitted to the Contractor prior to shipment for assembly and installation by Subcontractor at the INEEL.
- Dust confinement skirting and dust pick-ups capable of tying into the air scavenger system.

### **5.3 Box Unloader**

The soil handling system (Box Unloader) must be capable of unloading a 2' x 4' x 8' box with contents weighing 8,000 pounds into the mixer with minimal amount of soil transfers and no contamination exposure to personnel. The contamination control confinement system shall have dust pick-ups capable of tying into the air scavenger system. Dust levels must be maintained below  $40 \mu\text{g}/\text{m}^3$  during unloading operations. It is anticipated that confined equipment would need to be used to accomplish this task. There must also be provisions made for the emptying of the soil boxes without allowing the plastic liner to fall into the mixer.

Manual removal of lids from the 2' x 4' x 8' waste boxes will occur within the air scavenger system and be the responsibility of the Contractor.

This system shall be capable of automatically introducing as much as 6,400 pounds of reagent into the mixing unit either by the box unloader or other means. Dust levels during this operation must also be kept below  $40 \mu\text{g}/\text{m}^3$

### **5.4 Air Scavenger System**

An air scavenger system shall provide total elimination of fugitive dust emissions during soil transfer, soil mixing, and soil unloading activities. The mixer enclosure shall be sealed or controlled such that fugitive dust does not occur. Dust levels must be maintained below  $40 \mu\text{g}/\text{m}^3$  during all operations. If possible, a minimum vacuum of 0.10-in. w.g. must be maintained on the soil feed system. Exhaust air shall be filtered with at least a single roughing filter and dual nuclear grade HEPA filters. The HEPA filters shall be 24" x 24" x 12", Flanders, GGF, fluid seal type or equivalent. Air introduced into HEPA filter banks must be maintained below

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90% relative humidity. This requirement shall be accomplished by utilizing duct heaters as necessary. The filter housing shall be Flanders/CSC or equivalent, and shall be complete with in-place DOP test sections upstream and downstream of each HEPA filter. Differential pressure gages shall be installed to monitor pressure drop across the pre-filter bank and each HEPA filter bank. The exhaust system shall be designed to meet the requirements of NFPA-801 (Fire Protection for Facilities Handling Radioactive Materials). The Subcontractor shall evaluate the need for a baghouse filtration system upstream of the exhaust filter bank. A filtered exhaust ventilation system and a make-up air system capable of up to 4,000 cfm of air are available within the current facility design. This system may be used at the Subcontractor's option. If more air is required by the proposed system, the Subcontractor shall include with their proposal the design, delivery, and installation of a filtered exhaust air system and a corresponding make-up air system meeting the above requirements.

## 5.5 Remote Station Process Control Requirements

Due to the radioactive nature of the soil, the SSS shall employ remote monitoring/communication/process control. The process control/monitoring shall be programmable logic controller (PLC) based with a panel mounted display capable of displaying system parameters/alarms via a Human Machine Interface (HMI). The PLC shall be complete with power supply, CPU, rack and I/O modules (including Ethernet for remote communications). As a minimum, the process control/monitoring system shall monitor motor temperature, gearbox temperature, motor current draw, automatic lubrication system temperature and pressure, provide start/stop control and provide alarms when system operating parameters are out of normal operating range. The Subcontractor shall submit any software or programmable logic (e.g., PLC ladder logic) necessary to control and operate the SSS. Programming shall be done by the Equipment Supplier. All process system controls shall be housed in a NEMA 4X enclosure for indoor and housed in NEMA 3R enclosures for outdoor equipment.

The remote station control house shall have the following requirements:

- Capability of fitting in the space local to the SSS (See drawing A-1).
- Insulated.
- Contain a safety glass window for viewing of the SSS operation.
- Air-conditioned/heated.
- Wired for lights/receptacles.
- A personal computer station (Government Furnished Equipment) for data acquisition related to the process. The Subcontractor shall submit their hardware, software and PLC requirements to the Contractor for approval through the Vendor Data Submittal process.
- Located sufficiently far enough away from the SSS to allow for shielding as necessary.

## 5.6 Electrical Power

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All motors shall be squirrel-cage, induction, energy efficient, high power factor type, rated for continuous operation.

Motors shall be rated 480 V, three (3) phase, 60 Hz duty and recommended for variable speed operation when driven with a Variable Frequency Drive (VFD). Motors shall have horsepower rating of not less than 115% of the brake horsepower required by the mixer when operating at design conditions. All motors shall have a minimum service factor of 1.15.

Motors shall be properly matched to the VFD for maximum motor/drive system efficiency and minimum total harmonic distortion. If the motor manufacturer does not manufacture the VFD, the Subcontractor shall obtain certification from the motor manufacturer stating that the motor furnished with the system is compatible with the VFD and that it will meet all the requirements of this Specification.

Motors shall operate without exceeding the vibration allowances specified in NEMA MG-1-12.05.

Motors shall be equipped with a non-reverse ratchet to prevent reverse rotation of the rotating elements. Motor manufacturer shall place rotation arrows on the motors.

All motor nominal efficiency shall be determined in accordance with the latest version of IEEE Standard 112, Test Method B. Motors shall have a guaranteed minimum efficiency at full load, greater than or equal to 94%. Motors shall have a full load, minimum power factor of 85 percent.

Motors shall have an insulation system for application with variable frequency drives. Insulation shall meet the requirements of NEMA MG-1, 1993 Part 31.

VFD's shall be solid state, with a Pulse Width Modulated (PWM) output. The drive efficiency shall be 97% or better at full load and shall be 95% or better at worst case conditions. The VFD shall operate from 480 VAC $\pm$ 10%, three phase, 60 $\pm$ 2 Hz power. The VFD enclosure shall be NEMA 4X.

The VFD shall be self protecting from electrical damage due to normal transients and surges in the incoming power line, grounding or disconnection of its output power, and any interruption in the incoming speed reference signal. The VFD shall be provided with automatic restart capability after an overcurrent, undervoltage, overvoltage or loss of input signal. The VFD shall start motors at the speed set by the minimum speed adjustment and ramp to set speed at the rate set by acceleration adjustment.

The motor control center (MCC) shall be 480 volt, three phase, three wire, 60 Hz and sized per the NEC to accommodate the SSS electrical equipment loads. The MCC shall be housed in a NEMA 12 enclosure. Bracing shall be 65 kAIC minimum.

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The metal enclosed MCC shall be completely factory assembled and bear a UL label. All breakers shall be the product of a single manufacturer. All equipment shall be certified new and unused. All live components shall be contained in a grounded metal enclosure sized per manufacturer's requirements. Each breaker compartment shall be isolated completely from other breaker compartments by grounded metal barriers. Each breaker shall be mounted in an individual grounded compartment. Each compartment shall be fully equipped with breaker and starter as required to accommodate the SSS electrical equipment. Padlocking provisions shall be provided to lock each breaker/main disconnect in the open position.

## **5.7 Human Factors**

The design shall use human factor engineering principles and criteria such that all equipment is easily maintainable. The control panel's controls and displays shall promote rapid operator location of any given component and maximum operator awareness of the SSS condition. Component arrangement shall promote association of related controls and displays.

The design shall provide access to each system component for operation, cleaning, and maintenance.

The design shall provide for equipment that is capable of being locked and tagged out during cleaning, maintenance, and repair.

The design shall provide engineering controls for the mitigation of noise in excess of 85 decibels, time weighted average (TWA).

## **5.8 Reliability/Maintainability**

The system shall be designed for a 15-year life. Design life considerations extend only to components not expected to require replacement over the life of the installed system under normal operating conditions.

## **5.9 Design Verification**

The Equipment Supplier shall hold a design review at its facility for Contractor personnel. The purpose of the review is for the Contractor to verify that the Equipment Supplier's system meets approved performance criteria. The review will also evaluate the selection of the equipment and the preshipment factory testing. Specific rationale for the selection of the equipment shall address performance and functional requirements, interface compatibility, and design life considerations at a minimum. Preshipment factory test plans shall be presented for discussion of test objectives, requirements, and configuration. The design review shall be organized such that presentations and discussion entail three days. Hard copies of presentation material shall be prepared for ten Contractor personnel attending the review. The design review shall be held thirty (30) days before the Equipment Supplier commits to fabrication or procurement of equipment.

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## **6.0 MANUFACTURING/ASSEMBLY**

### **6.1 General**

The SSS equipment shall be constructed for the design conditions and performance requirements specified herein and in accordance with the applicable sections of the referenced codes and standards. All units of the same classification furnished with similar options shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

The Equipment Supplier shall clean, furnish and completely assemble the SSS equipment at its facility. The Subcontractor shall be responsible for complete assembly and installation of the SSS in and around building CPP-1688 at the INEEL. Assembly and installation shall be performed with guidance from the Equipment Supplier's Service Engineer.

### **6.2 Material**

Materials used shall be free from defects that would adversely affect the performance or maintainability of individual components or the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in the Equipment Manufacturer's standard commercial practice.

### **6.3 Cleaning, Painting, and Coating**

**6.3.1** All SSS equipment shall be thoroughly cleaned. All scale, oxides, lubricants, chips, and other foreign matter shall be removed. All burrs, casting scars, and sharp edges shall be ground smooth. The Subcontractor shall submit a cleaning procedure.

**6.3.2** Any painting shall be in accordance with the Equipment Manufacturer's standard practices and procedures. The ambient and material temperature shall be at least 50° F for any surfaces to be painted. Any paint or primer used shall not contain lead or chromium. MSDS's shall be supplied for the paint and primer.

**6.3.3** Electrical wiring, instrumentation devices, and all manufacturer's nametags shall not be painted.

**6.3.4** Stainless steel and nonmetallic surfaces shall not be painted.

**6.3.5** The Subcontractor shall perform any on-site painting.



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## **7.0 QUALITY ASSURANCE**

### **7.1 List of Equipment Supplier's Quality Assurance Requirements**

The Equipment Supplier is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Documentation of inspections shall be made available to the Contractor.

The Equipment Supplier shall submit a detailed written manufacturing/inspection/test plan. This plan shall enable the Contractor to provide a schedule for inspection hold points.

The Equipment Supplier must document, implement, and maintain a Quality Assurance Program consistent with the requirements of ASME NQA-1-1997, ISO 9001, or Contractor approved equivalent.

### **7.2 Performance Tests (Factory Preshipment)**

The Equipment Supplier shall submit to the Contractor an "in-shop" testing plan and procedure prior to demonstration of the Soil Stabilization System capabilities at the Equipment Supplier's facility. The plan and procedure shall include the date, test conditions, duration of testing, testing sequence, materials used, and methods of performing the tests.

Other than SSS equipment defined in this Specification, the Equipment Supplier shall provide everything needed to perform the "in-shop" tests including:

- One 2' x 4' x 8' wooden box similar to those containing the waste at the INEEL.
- Soil that weighs approximately 8,000 pounds that simulates the soil gradations listed in Section 5.1.2.
- Portland Cement with a die additive. The die additive is used to determine how well the soil/cement combination is mixed.
- A forklift capable of loading the 2' x 4' x 8' wooden box onto the Box Unloader as well as removing the 2' x 4' x 8' box from under the Mixer.

Factory testing shall demonstrate that all equipment operates and interfaces together into a functional Soil Stabilization System as defined within this Specification.

Testing acceptance criteria:

- Box Unloader: Must be capable of unloading 8,000 pounds of soil from a 2' x 4' x 8' box into the Mixer.
- Mixer: Provides a homogeneous blend of soil and Portland Cement. Mixer is capable of accepting liquid (water) with no leakage. Mixer is capable of delivering soil back into the 2' x 4' x 8' boxes as well as a 20 cubic yard roll-on/roll-off container.

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Successful demonstration of Mixer washdown system. Successful VFD functionality test per requirements listed in Section 5.6.

- Air Scavenger System: Provides total elimination of fugitive dust emissions. Dust levels must be maintained below  $40 \mu\text{g}/\text{m}^3$  during all soil transfer operations. Air introduced into HEPA filters is below 90% relative humidity.
- Remote Station Process Control: Shall demonstrate the monitoring, communication, and process control features of the Mixer as listed in Section 5.5.

Subsequent to “in shop” testing, the Equipment Supplier shall submit to the Contractor a written test report documenting the results of “in-shop” testing. The test reports shall be submitted to and approved by the Contractor prior to shipment to the INEEL.

### **7.3 Performance Tests (On-Site, INEEL)**

The Equipment Supplier shall submit to the Contractor a systems operability (SO) testing plan and procedure prior to SO testing the SSS at the INEEL. The (SO) plan and procedure shall include the date, test conditions, duration of testing, testing sequence, materials used, and methods of performing the tests. The Equipment Supplier shall also submit, subsequent to SO testing, a signed SO testing report warranting that all SSS components have been commissioned, adjusted, and are performing to design Specifications.

The Subcontractor is responsible for assembly and installation of the Soil Stabilization System at the INEEL under the guidance of a Service Engineer from the Equipment Supplier.

The Contractor is responsible for providing the 2' x 4' x 8' boxed waste soils, aqueous liquid/sludge wastes, and reagents for the SO testing activities. The Contractor is also responsible for conducting the TCLP.

On-Site testing shall demonstrate that all equipment operates and interfaces together into a functional Soil Stabilization System as defined within this Specification.

Testing acceptance criteria:

- Box Unloader: Must be capable of unloading 8,000 pounds of waste soil from a 2' x 4' x 8' box into the Mixer.
- Mixer: Provides a homogeneous blend of waste soil and reagents. Mixer is capable of delivering soil back into the 2' x 4' x 8' boxes as well as a 20 cubic yard roll-on/roll-off container. Successful VFD functionality test per requirements listed in Section 5.6.
- Air Scavenger System: Provides total elimination of fugitive dust emissions. Dust levels must be maintained below  $40 \mu\text{g}/\text{m}^3$  during all soil transfer operations. Air introduced into HEPA filters is below 90% relative humidity.
- Remote Station Process Control: Shall demonstrate the monitoring, communication, and process control features of the Mixer as listed in Section 5.5.

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Subsequent to "On-Site, INEEL" testing, the Equipment Supplier shall submit to the Contractor a written test report documenting the results of testing activities. The test reports shall be submitted to and approved by the Contractor after testing activities are completed at the INEEL.

## **7.4 Welding**

This specific design does not allow for welding or welding repairs at the INEEL. However, if the Subcontractor determines that welding is required, the Contractor's approval must be obtained prior to performance of any welding. Such approval may be granted only upon the establishment of Contractual Specifications, procedures and qualification requirements to be applied to the welding. Any welding performed at the Equipment Supplier's site shall comply with American Welding Society (AWS) requirements.

## **7.5 Certificates of Conformance**

Equipment Supplier's Certificates of Conformance shall be furnished for all major components. Each Certificate of Conformance shall:

- A. Identify the equipment purchased.
- B. Identify specific procurement requirements that have met the following:
  - 1. Referenced codes and standards.
  - 2. This Specification.
  - 3. Approved changes, waivers, or deviations.
- C. Certify that the items furnished are of the proper design and are mechanically and electrically suited to meet the operating conditions as stated in this Specification.

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## **8.0 EXECUTION**

### **8.1 Installation**

**8.1.1** The Subcontractor shall furnish an Equipment Supplier's Service Engineer to provide technical direction for the Subcontractor's installation, field testing and initial operation of the equipment. The Service Engineer shall also provide training on the equipment. The extent of services and responsibilities of the Service Engineer shall include testing, training, and start-up of all electrical and mechanical components. The Service Engineer shall be an expert in all fields required to allow him to troubleshoot and repair any portion of the system. The Service Engineer shall report directly to the Contractor.

**8.1.2** The Subcontractor shall notify the Contractor as far in advance as practical, but not less than ten (10) working days before, the date for initiation of the services of the Service Engineer.

**8.1.3** The Equipment Supplier's Service Engineer shall instruct the Subcontractor on the interface between the SSS and plant tie-ins. The Service Engineer shall verify proper installation of the SSS. The Equipment Supplier shall allow twelve (12) working days and three (3) trips to the installation site (INEEL) for technical support activities. A working week is four (4) 10-hour days. Time allotted for technical support is 120 hours.

**8.1.4** The Service Engineer shall submit daily reports to the Contractor covering field activities of the installation and testing.

**8.1.5** Installation drawings will be prepared by the Contractor to incorporate the equipment into the facility and show location of interfaces. The Subcontractor shall submit all information required for the Contractor to prepare the installation drawings, such as pad requirements and connection locations.

**8.1.6** The Subcontractor will be responsible for supplying construction material for connection of the SSS to the plant tie-ins.

### **8.2 Startup and Calibration**

All start-up and testing shall be performed by the Equipment Supplier's Service Engineer in accordance with technical guidance of this Specification.

The SSS shall be performance tested on site (INEEL) prior to turnover to Contractor and the test data shall be incorporated by the Subcontractor into the Operations and Maintenance Manual.

Instrumentation for controlling the process and taking data must be calibrated by the INEEL Calibration Laboratory.

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### **8.3 Training**

The Equipment Supplier's Service Engineer shall provide technical training at the INEEL for Operations and Maintenance personnel. The training, as a minimum, shall include four (4) days of course and field instruction, for six (6) people, and shall include all training materials. The training may coincide with the start-up and commissioning of the system. Time allotted for technical training is 40 hours.

### **8.4 Maintenance**

The Subcontractor shall submit evidence that a permanent service organization is available to render necessary services for the equipment on a regular basis, including the name and telephone number of the person to contact for services. The Subcontractor shall identify if the services will be rendered by the specific Equipment Manufacturer or if the Equipment Supplier is trained and authorized by the Equipment Manufacturer(s) to service the SSS equipment.

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## **9.0 PACKAGING AND SHIPPING**

### **9.1 Packing and Packaging**

The SSS equipment shall be inspected for packaging, preservation, and marking for shipment to verify conformance with the terms of this Contract. All openings shall be covered to prevent entry of foreign material. The SSS equipment shall be preserved to prevent damage from moisture during shipment and storage. Partial assemblies, structures, and components shall be adequately supported, cushioned, and restrained for shipment without damage.

Instrumentation devices shall be protected from damage and contamination during shipment.

Packing and packaging will be subject to inspection and approval by the Contractor. Materials used in packaging including, but not limited to, resins used in plywood, shipping gaskets, plastic sheeting, and tarps shall be chloride free. Packaging and shipping procedures shall include the make, model, trade name, and material of all items used for packaging. As a minimum, preparation for shipment of the SSS shall include the following:

Internal and external parts shall be suitably supported and braced to prevent damage during handling and transporting.

A waterproof tarp shall be provided to completely cover each piece of equipment if storage at the construction site is necessary.

Preparation for shipment shall be in accordance with the Equipment Supplier's approved packaging and shipping procedure and shall provide protection from damage and contamination during shipment, handling and six months outdoor storage at INTEC.

### **9.2 Marking and Handling**

An identification tag of corrosion-resistant metal shall be permanently affixed to each piece of equipment. Each tag shall include the Equipment Manufacturer's name, model and serial number. Similar identification tags shall be affixed to the drivers, to include horsepower and other salient features of the motor.

Shipping containers shall be identified by the purchase order number, equipment item number, total shipping weight, and description of contents (using 2-inch high lettering minimum) with ink, paint, or other indelible material markings on two adjacent sides of the container.

All motors shall have a stainless steel nameplate that states the service factor minimum and nominal full load efficiencies and the full load power factor in accordance with NEMA MO-1. In accordance with NEMA MO-1, the nameplate shall designate the maximum number of starts and the required cooling period when a motor is started under conditions of (a) cold rotor and, (b) warm rotor (after running continuously at full load for a period of one (1) hour).

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## ATTACHMENT A

### VENDOR DATA REQUIREMENTS

414.12A  
09/13/99  
Rev. 05

The Supplier shall furnish to the Contractor the specified number of copies of required vendor data for disposition, sufficiently in advance of the date that the material/equipment/service is required to be delivered and/or completed as defined by the Purchase Order. The Vendor Data Requirements form summarizes the submittal requirements of the Purchase Order and generally specifies the timing for each required submittal. Vendor data for all material and equipment requiring a disposition shall be submitted, reviewed, assigned a disposition code by the Contractor and returned to the Supplier. Unless designated as With Shipment, Vendor data shall be submitted under cover of Contractor form 540.03, Vendor Data Transmittal and Disposition, to:

Bechtel B&W Idaho (BBWI), LLC.  
Procurement Document Control  
P. O. Box 1625  
Idaho Falls, ID 83415-3521

Vendor Data shall be legible, reproducible, and comply with all applicable Purchase Order requirements. Vendor data submittals shall not be utilized to request deviations from, or changes to, the Purchase Order. Vendor data shall be submitted on a stand-alone basis. Reference to, or review of, previous submittals is prohibited. Vendor data shall clearly identify the submittal item and the submittal number to which it applies.

The Supplier and all lower-tier suppliers shall perform no work for which the vendor data has not been reviewed and dispositioned by the Contractor in accordance with the Vendor Data Requirements.

Vendor data causing any change to design details, layouts, calculations, analysis, test methods, procedures, or any other Purchase Order requirements shall be identified to the Contractor utilizing form 540.16, Interface Document.

Vendor Data disposition codes are:

- 'A' - (APPROVED), Related work may proceed.
- 'B' - (APPROVED W/COMMENTS), Related work may proceed ONLY after comments have been incorporated or otherwise reconciled.
- 'C' - (DISAPPROVED), Related work shall NOT proceed. Resubmit.
- 'D' - (INFORMATION ONLY SUBMITTAL - RECEIPT ACKNOWLEDGED), No further action is required.

# VENDOR DATA REQUIREMENTS

Requisition No.: \_\_\_\_\_

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Item Number	Item Description	Clause/Article Reference	Specification Reference	Quantity/Schedule				Contractor Reviews						Contractor Approval Required/ Info Only
				BFR	BU	PS	WS	Requestor	Procurement QA	Operations	Engineering	Program QA	Procurement Agent	
1	Design Verification Specification	341	4.6/5.9	8				X	X	X	X	X	X	A
2	Design Calculations Characteristic Calculations Performance Calculations	321	4.9	8				X	X	X	X	X	X	A
3	Test Reports Correction Calculations Characteristic/Performance Curves - <input checked="" type="checkbox"/> Actual <input type="checkbox"/> Typical Characteristic Curves Performance Curves Test Result Curves Calibration Curves Operating Curves Correction Curves Design/Qualification Testing	723	4.1/7.2			8		X	X	X	X	X	X	A
4	Catalog Data Engineering Drawings/Reproductions Schematics Block Diagrams Piping Plan Piping Elevation Foundation Plan	333 332	4.11 4.8			8		X	X	X	X	X	X	I

BFR - Before Fabrication Release      BU - Before Use By Supplier      PS - Prior To Shipment      WS - With Shipment      A - Approval Required      I - Information Only



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				BFR	BU	PS	WS	Requestor	Procurement QA	Operations	Engineering	Program QA	Agent	
6	Electrical Wiring Diagrams	332	5.5/5.6			8		X	X	X	X	X	X	I
7	General Arrangement Drawings	332	4.8	8				X	X	X	X	X	X	I
8	Structural Detail Drawings	332	4.8	8				X	X	X	X	X	X	I
9	Assembly Drawing	332	4.8	8				X	X	X	X	X	X	I
	Interface Drawing													
	Flow Diagrams (P. & I.D.)													
	Panel Cutout Drawings													
	Original As Built Tracings (Sepia)													
10	Weight of Unit	332	4.8	8				X	X	X	X	X	X	I
	Descriptive Data													
	Connection Drawing													
	Weld Map and History													
11	Manufacturing/Inspection/Test Plan	721	4.1/7.2/7.3	8				X	X	X	X	X	X	A
12	Traceability Procedure	442	-	8				X	X	X	X	X	X	I
	Bill of materials													
13	Cleaning Procedure	-	4.5/6.3	8				X	X	X	X	X	X	A
	Heat Test Procedure													
	Sensitive leak Test Procedure													
	Hydrostatic Test Procedure													
	Pneumatic Test Procedure													
	Liquid Penetrant Test procedure													
	Magnetic Particle Test Procedure													

BFR - Before Fabrication Release      BU - Before Use By Supplier      PS - Prior To Shipment      WS - With Shipment      A - Approval Required      I - Information Only

# VENDOR DATA REQUIREMENTS

Requisition No.:

Item Number	Item Description	Clause/Article Reference	Specification Reference	Quantity/Schedule				Contractor Reviews						Contractor Approval Required/ Info Only
				BFR	BU	PS	WS	Requestor	Procurement QA	Operations	Engineering	Program QA	Agent	
	Radiographic Procedure													
	Ultrasonic Test Procedure													
	Visual Examination Procedure													
	Weld Procedure/Qualification													
	Welder Performance Personnel Certification													
14	Electrical Continuity Test	723	5.5/5.6	8				X	X	X	X	X		I
	Continuity/Resistance Test Procedure													
	Free Ion Test Procedure													
	Calibration Procedure													
15	Inspection/Test Procedures and Reports (On site, INEEL)	721	4.1/7.3	8				X	X	X	X	X		A
	Weld Joint Test Specimens													
	Non Destructive Examination Personnel Certifications													
	Inspector Certifications													
	Test Certifications													
	Serialization Procedure													
16	Inspection Test Data	723	4.1	8				X	X	X	X	X		I
	Limited Shelf Life/Operational Life Data													
17	Recommended Spares	822	4.2	8				X	X	X	X	X		I
18	Manufacturer's Manuals	821	4.7	8				X	X	X	X	X		I
19	Special Tools List	-	4.2	8				X	X	X	X	X		I
20	Installation Manual (including drawings)	821	4.7	8				X	X	X	X	X		I
21	Maintenance Manual	821	4.7	8				X	X	X	X	X		I

BFR - Before Fabrication Release      BU - Before Use By Supplier      PS - Prior To Shipment      WS - With Shipment      A - Approval Required      I - Information Only

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# VENDOR DATA REQUIREMENTS

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Item Number	Item Description	Clause/Article Reference	Specification Reference	Quantity/Schedule				Contractor Reviews						Contractor Approval Required/ Info Only
				BFR	BU	PS	WS	Requestor	Procurement QA	Operations	Engineering	Program QA	Procurement Agent	
22	Operating Manual	821	4.7			8		X	X	X		X		I
	Chemical/Physical Test Reports - <input checked="" type="checkbox"/> Actual <input type="checkbox"/> Typical													
23	Certificate of Conformance	432	7.5				8	X	X	X		X		I
24	Special Packaging, Shipping, and Rigging Procedures	832	4.3/5.1.9/9.1			8		X	X	X		X		A
	Certification of Materials to ASME Code							X	X	X				
	Certificate of Disposal or Destruction													
	Additional Submittal Requirements													
25	Daily Reports (On-Site, INEEL)	-	8.1.4		8			X	X	X		X		I
26	Inspection Test Procedures and Reports (Factory Preshipment)	721	4.1/7.2			8		X	X	X		X		A
27	Material Safety Data Sheets (MSDS)	-	4.4/6.3.2	8				X	X	X		X		A
28	Point-By-Point Response	-	1.2	8				X	X	X		X		A
29	Minimum Qualifications of Equipment Supplier	-	2.1	8				X	X	X		X		I
30	Service Requirements	-	4.10	8				X	X	X		X		I
31	Quality Assurance Program Requirements	-	4.13/7.1	8				X	X	X		X		A
32	Software/Hardware/PLC	-	5.5			8		X	X	X		X		A
33	Equipment Service Organization	-	8.4		8			X	X	X		X		I
34	Electrical Requirements	-	5.1.5			8		X	X	X		X		I
35	Warranty	-	4.12				8	X	X	X		X		I
36	Lifting and Tie Down	-	5.1.9				8	X	X	X		X		I
37	Training Outline	-	1.2/8.3			8		X	X	X		X		A
38	Maintenance Platform Design/Drawings	-	5.2				8	X	X	X		X		A
39	VFD Functionality Test Procedure/Report	-	5.6/7.2		8			X	X	X		X		A

BFR - Before Fabrication Release      BU - Before Use By Supplier      PS - Prior To Shipment      WS - With Shipment      A - Approval Required      I - Information Only

Specification	SSSTF SOIL STABILIZATION SYSTEM (SSS) PROCUREMENT SPECIFICATION	Identifier:	SPC-1481
INTEC		Revision:	0
		Page:	A5 of A5

## ATTACHMENT A

